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ABSTRACT

This report contains an outline of the method and the rationale for a project whose purpose is to develop training programs which are relevant to the specific requirements of technical occupations in nine allied health professions. The nine professions are in (a) nursing, (b) inhalation therapy, (c) radiology (technician level), (d) clinical laboratories, (e) medical records, (f) food service, (g) hospital business office, (h) ward management, and (i) emergency medicine (technician level). Task analysis is being used to validate existing curricula and to determine new curricula for the training programs. The study will be accomplished in 10 steps: (a) task inventories developed in an initial survey are being revised; (b) a revised survey instrument has been designed to gather the necessary data; (c) a statewide sample of institutions will be identified and their cooperation secured; (d) the institutions will then be surveyed; (e) observations will be made on a small number of trainees to ensure the reliability of the inventory checklist; (f) a retest will be given to a small number of respondents to determine the reliability of the instrument over time; (g) the results of the survey will be analyzed to determine the relationships among level of training, location of institution, and type of certification; (h) experts will be gathered to develop the skills and knowledge required to perform the tasks; and (i) common curricula will be selected for validation from the curricula of Pennsylvania institutions that offer training in the occupational areas. (HMD)

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EDUCATIONAL PROJECTS, INC.

Pittsburgh, Pennsylvania

Allied Health Professions Project

TASK ANALYSIS FOR CURRICULUM DESIGN AND VALIDATION

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NATIONAL INSTITUTE OF EDUCATION
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TABLE OF CONTENTS

	Page
INTRODUCTION	1
CURRENT STATUS AND FUTURE PLANS FOR THE PROJECT	6
THE OCCUPATION OF EMERGENCY MEDICAL TECHNICIAN	8
APPENDIX A: A VALIDATION OF AN EXISTING CURRICULUM FOR RADIOLOGIC TECHNOLOGY	13
APPENDIX B: AN ANALYSIS OF TWO TASKS FOR EMERGENCY MEDICAL TECHNICIAN	29
APPENDIX C: EPI ALLIED HEALTH PROFESSIONS PROJECT - COMPLETED SURVEY INSTRUMENTS RECEIVED FROM HEALTH CARE FACILITIES	43
APPENDIX D: ORIGINAL TASK INVENTORY AND REVISED TASK INVENTORY	44
APPENDIX E: BACKGROUND DATA SURVEY	50
APPENDIX F: ADVISORY COMMITTEE - EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE PROJECT	53
APPENDIX G: DRAFT DOCUMENT - EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE PROJECT	54

INTRODUCTION

The Allied Health Professions Project of Educational Projects, Inc. is a result of a joint interest and commitment of the part of the Sarah Mellon Scaife Foundation and the Pennsylvania Department of Education to attempt to work toward the development of training programs for technicians which are relevant to the specific requirements of the job. Task analysis techniques were chosen as the method upon which the development of these training programs is based.

The technique being used attempts to determine the specific tasks which are performed by individuals in the occupation being studied. Upon determination by workers in the field, the data obtained can be used to indicate the specific training needs of an individual planning to enter the occupation. In addition, the specific tasks can be analyzed in terms of the necessary skills and knowledge which the worker must possess to perform the task. This information is then used for the development and/or validation of the curriculum which is used for training.

The successful translation of the job requirements to the training program can be of great importance in the attempt to develop relevant training. In addition, this effort can be used to indicate the minimum training requirements for entry to the occupation. This information in turn is useful in the development of career ladders where such ladders are nonexistent.

The Use of Task Analysis in Curriculum Design:

There are two basic methods whereby task analysis can be useful in the area of curriculum design. The first of these is in the validation of existing curriculum. The second is in the development of new curriculum, particularly where such curriculum is only in the formative stages.

Within each of the above alternatives, there also exists two philosophies for the development and/or validation of curriculum. The first philosophy involves the inclusion in the curriculum of the specific tasks which must be performed. The second is to include within the curriculum the skills and knowledge requisite for performance of the tasks apart from the actual task itself.

The first philosophy, that of teaching the task, can provide the student with the necessary skills to perform, within the occupation being considered, in the shortest period of time. However, since the student from such a training program is prepared to perform only those tasks which are presented to him in his course of study much of what he knows will not be transferable. Here the emphasis is upon the operational performance of the task itself. If a change in procedure results in a major modification in the tasks or the method of performance of the tasks, it is necessary that the performer be retrained in the new tasks and methods. In addition, the horizontal and vertical mobility of an individual trained in such a manner is limited as a result of a less than required understanding of the basis for the task performance.

The second philosophy, that of teaching the skills and knowledge necessary for performance of the task will lead to a longer period of training. However, since the basis for training is the skills and knowledge which are necessary to perform the task and not just the performance of the task itself, the training should be transferable across occupations. This is the case if one considers that many of the individual skills and knowledge required to perform a task will most likely remain the same even with major modification to the task itself. Thus, the performer will require training in only the specific areas which are affected by the modification. This transferability of training is particularly of value in providing the worker with the possibility of both horizontal mobility between occupations and vertical mobility within the occupation itself.

As an example, consider the function of decision making. Does one train an individual to make specific decisions given specific situations, or does one train the individual to use a general decision-making technique which is applicable in all decision situations? Does the educational system teach people to perform specific duties, or does it concentrate on the similar processes, skills and knowledge which go into the performance of the duties? The latter is obviously the more desirable.

However, in the above, there must be some restraining mechanism, for if complete transferability of skill and knowledge is the goal, the student will be in formal training for his entire life. The technique of task analysis provides this mechanism. By breaking down the specific tasks which are a part of the occupation for which the individual is training, the specific skills and knowledge necessary for performance within the occupation can be emphasized. It is no longer necessary to hypothesize that an individual needs to know, for example, the chemical elements, for if this is required it will be stated as a specific knowledge requirement within one or more of the tasks

which must be performed.

This is not to say that the individual should not receive training in the performance of specific tasks; for skill is developed through repeated practice. It is still necessary that the specific task be introduced during the training period so as to provide the necessary practice to assure its adequate performance. For example, the best method to teach the administration of an injection is to provide practice in performing the task.

The emphasis of the inquiry into the tasks performed is then, not only on the specific tasks performed, but also on the skills and knowledge required for their performance. To emphasize the former at the exclusion of the latter is to produce a worker who lacks the skills and knowledge necessary for vertical and horizontal mobility. On the other hand, without practice in performing the specific tasks, the worker will have the necessary knowledge and skills but will not be able to perform the tasks themselves.

The Validation of Existing Curricula:

Given the above, it is then necessary to analyze existing curricula to determine when and if the specific task is introduced and when and if the requisite skills and knowledge are presented within them.

This validation can be accomplished by investigation of an existing curriculum and course outlines to determine if the skills and knowledge indicated as required through task analysis are taught during the specific training program. In addition, it is necessary to determine if a period of time is available for the individual to practice the actual task. Those skills and knowledge which are not included in the curriculum are omissions which must be considered in revising the curriculum. Courses or sections of courses which provide no discernible relationship to the tasks performed must be questioned to determine the validity of their inclusion in the training program. Appendix A illustrates an initial comparison of a curriculum for Radiologic Technologist, versus the tasks which are performed in the occupational area.

In addition, if more than one occupational area is analyzed, areas of overlap in skills and knowledge required may be discovered. This overlap can provide a basis for the development of training modules which are related to all of the occupational areas involved.

The Development of New Curricula:

Task analysis provides a method for developing relevant new curriculum in areas where either the occupation is an emerging one with no predefined curriculum; where the curriculum is deemed to be outdated; or where existing curricula omit training in the specific area. The method whereby this is accomplished will be outlined in the following paragraphs.

In order to begin the development of such curriculum, it is necessary to break down in detail the procedural steps which make up those tasks applicable to the occupational area. These procedural steps are designated as the elements of the task. An example of such a breakdown of two tasks is given in Appendix B.

Having obtained the elements of the task, one must analyze these elements to determine the skills and knowledge which are requisite for adequate execution of the elements. These skills and knowledge are stated as a series of behavioral objectives which indicate what the worker must know and/or do (at what level) to execute the element.

The breakdown of these elements into behavioral objectives indicates the skills and knowledge which must be taught to the worker for adequate performance of the task. Also, as a result of the specificity of measure of output expected, which is inherent in a properly stated behavioral objective, a method for assessment of adequate performance is available.

This method can be accomplished for each of the tasks within the area being investigated. Duplicates are removed from the list of behavioral objectives obtained and the objectives relating to common skills and knowledge are grouped together. These groupings provide the basis from which a curriculum can be developed. In order to accomplish the development of such curriculum, an assessment of the groupings is made to break these groupings down according to the time required to obtain the desired output. This assessment will result in a series of units of study for the training program.

The above curriculum may not include all of the skills and knowledge necessary to perform the tasks or only those skills and knowledge which are specific to the task. Certain basic skills and knowledge are pre-requisite to the learning of the task, e.g., reading and writing at a given level in certain tasks. These basic pre-requisites should be stated although they may not be a part of the specific curriculum, since they can provide the qualification criteria for admission to the program. These pre-requisites, stated in behavioral terms, can provide a basis to expand the curriculum in order to provide opportunity for

upgrading of individuals into the training program as opposed to providing an entrance barrier to these individuals.

On the other hand, specific content knowledge and skill in performing the actual task may be required. These items should be considered for possible inclusion in the training program. The content knowledge which is applicable to specific situations and the actual practice required may best be introduced as a part of a unit of study related to actual performance of the task, in a practicum environment or as a part of the more general training required. In any case, consideration to these items should be given by the curriculum planner.

As is evident from the above, the development of curriculum, based upon task analysis is not easy. Much thought and effort is required. However, if curriculum is to be meaningful and relevant to the requirements of the job, what alternative methods are available and will such methods produce a comparable product?

CURRENT STATUS AND FUTURE PLANS FOR THE PROJECT

The Initial Survey:

The specific occupations chosen for the study by the corporation were:

(a) Nursing;
(b) Inhalation Therapy;
(c) Radiology Technician;
(d) Clinical Laboratories;
(e) Medical Records;
(f) Food Service;
(g) Hospital Business Office;
(h) Ward Management;
(i) Emergency Medical Technician.

It was decided that the initial survey would be limited to those occupations which are hospital-based, and thus would not include the occupation of Emergency Medical Technicians.

A series of meetings was held with representatives of a number of the hospitals serving Allegheny and Westmoreland Counties. The purpose of these meetings was to introduce to these individuals the purpose of the Allied Health Professions Project and to obtain from them their cooperation in the study. As a result of these meetings, agreement was obtained from eleven of the hospitals to take part in the initial survey. A breakdown of the hospitals taking part in the study, as well as the actual number of responses obtained by occupational area, is given in Appendix C.

The purpose of the initial survey was to obtain initial data from which conclusions could be reached concerning: a) the applicability of the methodology to the objectives of the project; and b) to determine any difficulties, procedural or within the task statements themselves, which require revision prior to a statewide survey of hospitals.

The initial survey was conducted using a series of task inventories developed under a federal grant to the UCLA Allied Health Professions Project. The inventories were distributed to a sample population of individuals working in the occupations in the survey hospitals. The choice of individuals to respond to the survey was made by the administrator of the survey who was employed by the hospital and acted as a liaison between the respondents and EPI. These survey administrators were instrumental in obtaining an excellent response rate for the survey, (see Appendix C). An example of the survey inventory is

given in Appendix D.

The data obtained from the survey was entered to a series of computer programs to determine the performance data as it related to the various background data collected on each respondent. As an example, the task performance data was grouped by occupational title within each occupation to determine those tasks which were performed by each level within the occupation. Other groupings were made on such things as licenses held and years experience in the field. This method of post-stratification of the data provided the basis for the analysis in the Interim Report of the project published in April, 1972.

The initial survey resulted in a number of observations concerning the application of task analysis for this purpose. Among the most important of these were:

(1) The task statements as developed by the UCLA study will require modification and elaboration if they are to be useful for the rating of the skills and knowledge necessary for the performance of the tasks.

(2) Additional data must be collected concerning the degree of discretion present in the performance of the task. In other words, it is necessary not only to know that an individual performs a certain task, but also with what freedom of action (or, conversely, level of supervision received) the individual performs the task. For example, a different level of training is required for a nurse to start an I.V. independently, as opposed to an aide doing the same job with a supervisor looking over her shoulder.

(3) The individuals chosen to respond in a sample site must be chosen in such a way as to assure a random sample is obtained. The use of a hospital employee to make such a choice could lead to a biased sample being chosen.

(4) A validation of the responses to the task list is necessary to determine how reliable the results of the study are.

(5) Certain statistical techniques can be used to determine if the differences in response obtained are significant for the various groups whose responses are compared within the

occupation.

THE OCCUPATION OF EMERGENCY MEDICAL TECHNICIAN

The second phase of the project, as defined, involves the investigation of an emerging career. The emerging career chosen was that of the ambulance attendant which will be referred to as Emergency Medical Technician (EMT) in the remainder of this paper.

The first priority in beginning the study of this occupational area was to establish an advisory panel of experts in the field of emergency ambulance service. This effort was facilitated by the fact that individuals who are well-respected nationally for their knowledge of emergency ambulance service reside in the local area. These individuals were contacted and have agreed to serve on our advisory panel. A complete list of this group is given in Appendix F.

A second priority of the project was for the corporation to employ an individual with experience in this occupational area. The corporation was fortunate to obtain the services of David J. Lindstrom as a Research Analyst. Mr. Lindstrom has had five years of experience as an ambulance attendant at Citizens Ambulance Service in Indiana, Pennsylvania. He brings to the corporation a wealth of knowledge and experience on the operation of a sophisticated ambulance service.

Procedure for Study:

Having accomplished the above, and thus setting the basis for the investigation of the emergency medical service:pre-hospital care field, the following steps must be undertaken:

(1) An initial list of tasks is being developed for emergency medical services: pre-hospital care. This list will be comprehensive and will cover all aspects of the operation of an ambulance service. The initial list is being developed based upon the experience of Mr. Lindstrom and other experts in the field, including the members of our advisory committee.

(2) Upon the completion of the initial task list a series of on-site visits will take place to add to the list of tasks and to clarify those tasks which are ambiguous. The on-site visits will entail the use of both direct observation and interviews with

performers. The sites chosen for the visits will be representative of the various types of ambulance services (professional, volunteer, police, funeral director) and the locality served (urban, rural, suburban). In addition, one or two of the federally sponsored pilot projects will be visited.

(3) Based upon these initial on-site observations and interviews, an inventory of tasks (Appendix D) will be constructed. This inventory will be used to gather data from individuals working in ambulance services within the Commonwealth of Pennsylvania on the frequency of performance of the task, the difficulty as assessed by the performers, and the amount of supervision received while performing the task.

(4) A random sample of ambulance services will be chosen from those within the Commonwealth. These services will be contacted to obtain their cooperation in the study.

(5) Task inventories will be distributed to the services in the sample. Each individual in each sample site will be requested to complete both the task inventory and a background summary sheet (Appendix E).

(6) In addition to the above, a small sample of the performers within the sites will be observed for one day. During this time, the observer will check, using the inventory, the tasks which the observer feels are being performed. At the end of the day, the performer will check the tasks he performed during the day. The results of these observations and performer response will be used to generate an estimate of the reliability of the inventory as compared to the use of observation.

(7) In order to obtain an estimate of the reliability of the inventory over time, a re-test will be made on a small sample of the initial group of respondents. The results of this re-test will be compared with the original responses to determine if any significant difference is obtained in the

responses.

(8) The results of the initial survey will be analyzed using post-stratification of the respondents to determine the relation of tasks performed to such things as the type of training received, general education, years experience, and type and location of the ambulance service where the respondent works.

(9) From the data gathered concerning the worker's assessment of the difficulty of the tasks, those tasks which are rated most difficult by the performers will be analyzed to determine the skills and knowledge which are necessary for adequate performance of the tasks.

(10) The tasks to be analyzed will require a further breakdown into the elements which make up the task and also the alternative circumstances under which the task is performed.

(11) For each of the tasks analyzed, the requisite skills and knowledge will be stated in terms of behavioral objectives. These behavioral objectives are measurable statements of the competency required to perform the tasks. (See Appendix B for an example.)

(12) Having broken down each of the tasks to behavioral objectives, these objectives can be arranged to determine the common competencies involved and the highest level of skill and knowledge required for the performance of the task. From this data, a series of course outlines can be developed. Also, through the use of the behavioral objective approach, a built-in method of assessment is obtained.

Future Implications:

The area of emergency medical services:pre-hospital care has only recently been recognized as an important part of the health delivery system. In the past, the purpose of an ambulance service has been only to transport the ill or injured patient to the nearest hospital as quickly as possible. It is now realized by many that a very critical point in a patient's life may be

reached in the time between the occurance of the illness or injury, and the arrival of the patient at the hospital. Thus, a nationwide effort has begun to upgrade the ambulance services available to the population. A national peer group registry (Emergency Medical Technician) has been founded in Columbus, Ohio; and is currently engaged in registering ambulance attendants and developing more stringent requirements for registry. Locally, a bill is currently being considered in Harrisburg to license ambulance services based upon certain specific requirements which must be met.

The data gathered and analyzed in this study can have a major impact on these efforts. This is particularly the case in relation to the academic training and requirements which will be placed upon the future EMT's. Using the data generated by this study, it will be possible to determine the specific competencies required on-the-job, and to limit the required training to those competencies which are relevant to the specific duties which will be performed.

As a result of the initial investigation of the area of emergency medical services: pre-hospital care, EPI has determined that the needs are such that the application of task analysis is not limited to only the development of training programs, but can also be used as a management tool. The use of task analysis as a part of a more complete information system is the subject of a working paper which has been included as Appendix G.

Plans for the Eight Allied Health Professions:

The eight allied health professions, upon which the initial survey was based will be surveyed on a statewide basis and models for curriculum development devised. The following steps are necessary to accomplish these goals:

(1) The task lists used in the initial survey are currently being revised to eliminate the ambiguity and inconsistency contained within them.

(2) A revised survey instrument has been designed which will gather the data necessary for the study. (Appendix D)

(3) A statewide sample of institutions must be chosen and agreement of inclusion of the institution in the study must be obtained.

(4) The institutions in the sample must be surveyed.

(5) An observation on a small number of performers will be made. During this observation, the observer will check on the inventory those tasks which he feels are being performed. After the observation, the performer will check those tasks which he performed. From the data obtained, an estimate of the reliability of the instrument versus observation will be obtained.

(6) A re-test will be given to a small sample of the initial respondents to estimate the reliability of the survey instrument over time.

(7) The results of the survey must be analyzed to determine the relation of performance to certain post-stratified data such as level of training, location of institution and type of certification.

(8) A group of occupational experts will be gathered to develop the skills and knowledge required to perform the tasks.

(9) Using the methods previously outlined for the use of task analysis as a method for developing and/or validating curriculum, certain of the tasks which are judged to be most difficult will be analyzed to obtain the skills and knowledge required to perform them.

(10) Curricula and courses of study will be gathered from those institutions in the Commonwealth offering training programs for the occupational areas. This information will be used to select common curricula for validation.

APPENDIX A

A VALIDATION OF AN EXISTING CURRICULUM FOR RADIOLOGIC TECHNOLOGY

APPENDIX A

A Validation of an Existing Curriculum for Radiologic Technology

Introduction:

The curriculum of Radiology Technology was chosen as the area which would be validated on a pilot basis. The specific curriculum is that published by the American Society of Radiologic Technologists. This curriculum, along with successful completion of a registry exam, leads to the certification of Radiologic Technologist.

Traditionally, the training for Radiologic Technologist has been done in the hospital. Recently, however, this training program has been introduced in the community college (Williamsport Area Community College) and in the four year college (Elon College in cooperation with Duke University Medical Center). This may indicate a trend since hospitals, faced with rising costs, can be expected to consider the possibility of elimination of training in those areas which have traditionally been their responsibility.

In each of the cases mentioned above, the training received in the academic atmosphere is supplemented by an internship at a cooperating hospital. This method provides the required on-the-job experience for the trainee without the necessity for the academic institution to invest large amounts of capital in x-ray equipment. There are certain costs to the efficiency of training using this method since the trainee is exposed to the actual hospital operation atmosphere for only the period of the internship, whereas if the training is done at the hospital, this exposure is for the total two-year training program. The constant exposure to actual operating conditions and practice serves as a reinforcement mechanism for that which is learned in the classroom. Specifically, the opportunity to practice the skills is separated by a significant time period from the introduction of the required knowledge. That the benefits of training Radiologic Technologists in an academic institution outweigh the costs is still subject to question. Regardless of the outcome, the specific skills and knowledge to be learned will remain the same. Only the method of introduction and presentation will be affected by the location of the training program.

The Recommended Curriculum:

The curriculum recommended by the American Society of Radiologic Technologists in their 1970 publication, Curriculum and Teacher's Syllabus for Schools of Radiologic Technology, is as follows:

Basic Curriculum:

A. Orientation and Elementary Radiation Protection
B. Professional Ethics
C. Office Procedures
D. Anatomy and Physiology
E. Physics
F. Darkroom Chemistry & Technique
G. Principles of Radiographic Exposure
H. Radiographic Positioning
I. Medical Terminology
J. Common Radiographic Procedures Using Contrast Media
K. Nursing Procedures Pertinent to Radiology
L. Pediatric Radiography
M. Principles of Radiographic Exposure
N. Protection to Patients and Personnel
O. Special Radiographic Procedures
P. Topographic Anatomy
Q. Radiation Therapy
R. Intraoral Radiography
S. A Survey of Medical and Surgical Diseases
T. Departmental Administration
U. Equipment Maintenance

Electives:

A. Psychology
B. Medical Use of Radioisotopes
C. The Fundamentals of Photography
D. Principles of Teaching
E. Research in Relation to the Radiologic Technologist
F. Technical Writing
G. Radiological Mathematics for Technologists
H. Civil Defense (Radiological Monitoring for Technologists)

Method for Analysis:

In conjunction with the Chief Radiologic Technologist at a local hospital, the task list used in the initial sampling was analyzed in terms of the skills and knowledge adjudged necessary to perform these tasks. The course subject matter was compared to each task and the task was related to those courses where some of the specific skills and knowledge necessary for performance of

the task were included. The listing of courses and the tasks whose required skills and knowledge include those taught in the course is presented in the final pages of this discussion.

Discussion of the Results:

By the nature of the curriculum analyzed, it was not possible to include the determination of the point where the specific practice of the task itself is introduced. It is expected that the on-the-job experience or the internship should provide the opportunity for the necessary practice. However, it is possible that a structured intern period could expose the student to opportunity to practice the task in a lesser time period than is currently required. Since the great majority of the hospital training program involves the provision for practice of the skills involved, it would seem that such an approach could lead to a significant reduction in the currently required 2400 hours.

In addition, depending upon the hospital which offers the curriculum, it is very likely that the individual students will receive varying degrees of practice in the particular skills. If a training program is offered in a small suburban or rural hospital, the student will not have as much opportunity to practice the skills involved in performing certain special procedures and will have little or no exposure to the areas of nuclear medicine and radiation therapy. In order that such a student be provided with the opportunity to practice the necessary skills, it would seem to be desirable that an exchange program with large metropolitan hospitals be instituted.

The career ladder which is present within a Radiology Department provides few opportunities for the Radiologic Technologist's advancement. The occupational groupings are:

Administrative

Chief Radiologist Radiologist Chief Technician

Staff

Technologist Therapy Specialist Nuclear Medicine Specialist

Support

Aide Dark Room Technician Clerical

As is evident from the above, the Technologist can choose to specialize in the areas of Therapy or Nuclear Medicine or he can move to the administrative position of Chief Technologist. The

training received does not appear to be adequate if the move to an administrative position is desired. The course of study is limited to ten clock hours and as a result does not provide the necessary training in such areas as budget control, supervisory skills, and cost analysis. This inadequacy could be met in the community college programs by providing the trainee with opportunities to develop the necessary skills and knowledge through courses from the general business curriculum. Such business training, if not specific content organized, could provide opportunities for advancement of the Radiologic Technologist into other areas of the hospital such as Ward Management. Such training should be given in addition to the general Radiologic Technologist training, thus providing those individuals who do not wish to move into administrative positions with the opportunity to terminate their training at a point short of the administrative training, while still allowing for completion of the specifics necessary to obtain Radiologic Technologist certification.

A possible solution to this need, which would provide for the needs of other of the allied health professions, is the inclusion of a curriculum for allied health professions management within the community college system. Those areas which relate to administrative functions within each of the specific technical training courses could be removed from the technical training and placed within the curriculum for administration, (such courses as Departmental Administration, Office Procedures, Principles of Teaching and Psychology in the Radiologic Technologist curriculum). The benefits of such an action would be:

(1) A shortening of the training program for technicians by removing those courses not immediately relevant to the needs of all trainees;

(2) A course of study which would provide the skills and knowledge relevant to the administrative function in allied health occupations;

(3) An answer to the void in training which exists in the area of Ward Management;

(4) A course of study which can provide the Registered Nurse with the necessary skills and knowledge to administer (a position which is quite often assumed by the R.N. soon after leaving training);

(5) A course which provides a direct relationship to the specific administrative needs of health occupations without the necessity for completion of a four-year bachelors training program.

Certain of the units of study in the basic curriculum were assigned few or no tasks during the analysis. Each of these units will be discussed briefly in the following paragraphs.

Orientation and Elementary Radiation Protection

This unit is an introduction to the occupational area of Radiologic Technology and the organization of the hospital. In addition a brief history and overview of radiology technology is presented. The introductory nature of the unit does not lend itself to the aquisition of specific skills and knowledge for task performance. It is rather, a unit where background information can be gained by the student.

Professional Ethics

This unit is a general introduction to the background of ethical principles of health care as these are related to the field of radiology. Also covered is the relationship of the technologist to patients and members of the health services delivery team, specific legal and ethical problems and the importance of appearance and manner. Again the unit is not such that it relates to specific tasks which must be performed by the technologist.

Office Procedures

This unit may be combined with the Departmental Administration unit. The purpose of this unit is to provide an introduction to the procedures early in the training in order that the student will have the necessary training to function during the two-year training period.

Anatomy and Physiology

The purpose of the unit is to give the student the required knowledge of the body structures and functioning in order that he might be able to use this knowledge in performing the specific technician tasks. The knowledge presented in this unit is that which can be considered as pre-requisite to the performance of many of the tasks.

The inclusion of this unit, as such, is subject to question. The introduction of anatomic and physiologic characteristics as a unit may be confusing to the student and likely requires review when related to specific x-ray positions and procedures. An alternative method which would seem to be more efficient is to introduce the specific pre-requisite knowledge, concerning a region of the body, during the training of the specific x-ray procedures relating to that body region. Thus, the relation of the knowledge to its application is clear to the student.

Physics

The purpose of this unit is to provide the student with a knowledge of the basic principles underlying the operation of x-ray equipment. This unit covers knowledge which can be considered as pre-requisite to the performance of tasks.

Again, as in the case of Anatomy and Physiology, an alternative is to introduce this knowledge with the specific equipment and tasks, in order that the student can relate the knowledge to its application. The introduction of general physics principles apart from application is of questionable value.

Medical Terminology

The purpose of this unit is to familiarize the student with medical terminology as it applies to radiology. Again, this unit involves pre-requisite knowledge for task performance.

For the reasons previously mentioned, this unit might best be introduced with the specific x-ray procedures relating to different regions of the body.

Topographic Anatomy

The purpose of the unit is to review the anatomy, placement of organs and their relation to others within the same anatomic region. This knowledge is pre-requisite to task performance. Thus, thought should be given to the presentation of this knowledge in relation to the specific procedures pertaining to that region of the anatomy.

Survey of Medical and Surgical Diseases

The purpose of the unit is to acquaint the student with disease and injury as it relates to the field of x-ray technology. This knowledge is pre-requisite for task performance, and as previously stated may best be introduced as this knowledge relates to specific procedures.

Intraoral Radiography

The purpose of the unit is to familiarize the student with dental radiography. This unit relates to only one task from the task list (Take dental x-rays). The unit includes a presentation of the anatomic considerations as well as the positioning of the patient and the geometry of the image formation. As such, this unit presents the combination of skills and knowledge necessary to perform the specific task of taking dental x-rays.

Consistently mentioned in the above discussion was the possibility of introduction of specific pre-requisite knowledge at the time this knowledge becomes relevant to the procedures being introduced to the student. To do this the entire curriculum must be revised. The benefit of such a revision could lead to a better retention by the student and more efficient presentation of the knowledge. That this will be the case is not assured. However, logic seems to say that this alternative method of presentation is worth trying. Only after experimentation can it be determined if this method leads to a higher quality graduate.

The Relationship of Specific Tasks to Courses within the Curriculum of Radiologic Technologist:

The following breaks down the curriculum of Radiologic Technology by course of study and lists those tasks which have, as part of the skills and knowledge necessary for performance, items which are included in the particular course.

Orientation and Elementary Radiation Protection

Review patient's clinical history

Office Procedures

Type correspondence

Darkroom Chemistry & Technique

Load (unload) film units
Number cassettes or screens for identification
Affix identification number to x-ray film
Load cameras for cinefluorography
Process films in surgery
Perform silver recovery operation
Perform safety check for exposure safelights
Maintain automatic processing machines
Operate automatic processing machines
Replace and mount x-ray screens
Maintain darkroom facilities and equipment
Prepare processing solutions
Mount films in viewing apparatus
Replenish solutions
Store unexposed films
Keep film hangers
Keep cassettes

Principles of Radiographic Exposure

Load (unload) film units
Operate polaroid units
Number cassettes or screens for identification
Affix identification number to x-ray film
Operate control panel settings
Operate video tape equipment
Label and transfer specimens
Operate cinefluorographic equipment
Operate image intensifier fluoroscopic units

Operate mobile x-ray units
Perform x-rays for cholecystographic studies
Calibrate x-ray machines
Test for screen film contact
Test for x-ray beam alignment
Develop technical procedures for special radiology examinations
Direct quality control functions

Radiographic Positioning

Position patients for therapy treatment
Select imobilization devices
Place patient in radiographic position
Take abdominal x-rays
Take spinal x-rays
Take chest x-rays
Take facial x-rays
Take mastoid x-rays
Take paranasal x-rays
Take x-rays of extremeties
Take x-rays of ribs and sternum
Perform mammograms
Perform urographic studies
Perform steroscopic x-rays
Perform upper GI series
Perform x-rays for cholecystographic studies
Perform x-rays for pelvimetric studies
Perform fistula or sinus tract x-rays

Common Radiographic Procedures Using Contrast Media

Prepare trays for special examinations
Select imobilization devices
Place patient in radiographic position
Prepare contrast media
Administer radiopaque preparations
Operate video tape equipment
Take abdominal x-rays
Take spinal x-rays
Take chest x-rays
Test for sensitivity to allergic reactions to contrast
Perform urographic studies
Perform upper GI series
Perform x-rays for contrast studies of large bowel or colon
Perform x-rays for contrast studies of esophagus

Perform x-rays of small intestine
Develop technical procedures for special radiology examinations

Nursing Procedures Pertinent to Radiology

Wash and sterilize treatment facilities
Make catheters for special x-ray examinations
Operate autoclave
Provide surgical x-ray assistance to physician
Perform cardiac catheterization and anicardiogram
Record patient's blood count
Coordinate communicable disease investigation
Assist patients to or from litters or wheelchairs
Prepare patients for examinations
Give standard first-aid treatment
Sterllize equipment
Change dressings
Transport patients

Pediatric Radiography

Prepare trays for special examinations
Select immobilization devices
Place patient in radiographic position
Take abdominal x-rays
Take spinal x-rays
Take chest x-rays
Take facial x-rays
Take mastoid x-rays
Take paranasal x-rays
Take x-rays of extremities
Take x-rays of ribs and sternum
Provide surgical x-ray assistance to physician
Perform arthrograms
Perform brochiograms
Perform cerebral angiograms
Perform gynecograms
Perform hysterosalpingograms
Perform cholangiograms
Perform intravenous pyelograms (IVP'S)
Perform laminograms
Perform macroradiograms
Perform pneumocardiograms
Perform pneumocystograms
Perform pneumoencephalograms
Perform urographic studies
Perform scanograms

Perform sialograms
Perform steroscopic x-rays
Perform upper GI series
Perform fistula or sinus tract x-rays

Principles of Radiographic Exposure II

Operate control panel settings
Operate cinefluorographic equipment
Operate image intensifier fluoroscopic units
Operate mobile x-ray unites

Protection to Patients and Personnel

Store radioactive materials
Test for scatter radiation
Test for sensitivity to allergic reactions to contrast
Measure radiation in patient's clothing, wastes and bandages following treatment
Perform decontamination procedures
Issue and collect film badges or other radiation detectors
Keep blood count records on radiology personnel
Coordinate communicable disease investigation
Plan emergency evacuation of patients, establish emergency priorities
Direct personnel in compliance with radiation safety regulations
Sterilize equipment

Special Radiographic Procedures

Prepare trays for special examinations
Select immobilization devices
Place patient in radiographic position
Prepare contrast media
Do special procedures
Operate video tape equipment
Load cameras for cinefluorography
Make catheters for special x-ray examinations
Label and transfer specimens
Operate cinefluorographic equipment
Operate image intensifier fluoroscopic units
Provide surgical x-ray assistance to physician
Perform cardiac catheterization and anicardiogram procedures

Perform arthrograms
Perform brochiograms
Perform cerebral angiograms
Perform gynecograms
Perform cholangiograms
Perform intraveneous pylelograms (IVP'S)
Perform laminograms
Perform macroradiograms
Perform pneumocardiograms
Perform pneumocystograms
Perform pneumoencephalograms
Perform urographic studies
Perform scanograms
Perform sialograms
Perform ventriculograms
Perform substraction techniques
Develop technical procedures for special radiology examinations

Radiation Therapy

Position patients for therapy treatment
Write radiology therapy instructions to give to patients
Store radioactive materials
Assist radiologist in treatment planning
Operate control panel settings
Attach cones and filters for radiation therapy
Measure biological half-life of radioactive materials
Measure radiation level of cadavers prior to autopsy or release
Instruct patient prior to theraputic administration of cobalt, roentgen or radium
Load applicators for radium therapy
Measure radiation in patient's clothing, wastes and bandages following treatment
Operate cobalt or super-voltage therapy machines
Operate ortho-voltage equipment
Perform functional checks on radiation therapy equipment
Perform radioisotope therapy
Operate low-voltage roentgen therapy equipment
Operate betatron therapy equipment
Operate linear accelerator therapy equipment
Perform decontamination procedures
Dispose of radioactive materials
Take treatment and port films
Direct therapeutic patient care procedures
Calculate dosages to be administered for prescribed procedures

Intraoral Radiography

Take dental x-rays

A Survey of Medical and Surgical Diseases

Coordinate communicable disease investigation

Departmental Administration

Load applicators for radium therapy
Prepare and keep index file
Assemble, index and file x-ray films
Forward x-ray reports to physician
Process loans of x-ray films to physicians or hospitals
Review, retire, or dispose of films and x-ray indexes
Keep blank forms for management control
Keep files of correspondence
Keep operating file of regulations, instructions and/or policies
Keep publications reference files
Keep radiologic diagnostic index
Keep radiology work record for statistical purposes
Keep accounts for direct billing
Prepare financial statements for direct billing
Prepare and submit supply requests
Prepare statements for direct patient billing
Coordinate communicable disease investigation
Coordinate patient clinical management
Develop patient clinical management
Develop procedures for data processing
Coordinate radiology activities with hospital administration
Plan emergency evacuation of patients, establish emergency priorities
Coordinate work functions of volunteers, (hours, patient handling)
Coordinate physical plant work orders or requests
Develop technical procedures for special radiology examinations
Develop organizational functional charts
Prepare budget estimates and justification
Establish and direct administrative operating policies, procedures and regulations
Direct quality control functions
Modify work methods and procedures

Develop and prepare cost analysis data
Schedule work assignments
Plan or modify radiology facilities' physical layout, space assignment
Plan and direct the filing and distribution of reports, records and correspondence (patient and department)
Direct diagnostic patient care procedures
Direct therapeutic patient care procedures
Direct nuclear medicine patient care procedures
Direct personnel in compliance with radiation safety regulations
Prepare and submit job descriptions
Interview and evaluate prospective employees
Resolve staff complaints
Resolve technical problems
Supervise technical staff
Investigate reports of unusual incidents
Serve on employee relations boards
Prepare employee ratings and counsel individuals in progression and career development
Plan, schedule and evaluate training programs
Evaluate instructors
Select and assign instructors
Supervise training program
Recruit trainees
Undertake placement activities
Originate correspondence
Prepare special orders on assignment, reassignment or transfer of patients
Establish an inventory system for supplies, equipment and material
Keep on call roster of doctors and/or technicians
Keep personnel file
Initiate authorization forms for administration of anesthesia or for performing operations
Initiate authorization forms for examinations of minors or mental incompetents
Prepare patient examination schedule
Develop patient instruction forms for radiologic examinations
Prepare vacation schedule
Prepare formal requests for radiation source changes

Equipment Maintenance

Clean radiographic equipment
Maintain automatic processing machines
Calibrate x-ray machines
Do minor repairs or adjustments to x-ray machine

Set up and schedule contract preventive maintenance programs
Maintain darkroom facilities and equipment

Psychology

Review patient's clinical history
Instruct patient prior to therapeutic administration of cobalt, roentgen or radium
Prepare employee ratings and counsel individuals in progression and career development
Orient newly assigned personnel

Medical Use of Radioisotopes

Store radioactive materials
Operate control panel settings
Detect, identify, and measure radioisotopes in samples
Measure biological half-life of radioactive materials
Measure radiation level of cadavers prior to autopsy or release
Perform radioisotope therapy
Perform scan utilizing specialized electronic detectors
Perform decontamination procedures
Direct nuclear medicine patient care procedures
Calculate dosages to be administered for prescribed procedures
Use radioactive sources in research

The Fundamentals of Photography

Reproduce x-ray films on 35-mm slides
Reproduce x-rays by direct duplication method, microfilm or microfiche

Principles of Teaching

Arrange for training aids, space and equipment
Conduct formal classroom instruction
Conduct on-the-job training
Keep and review student training records
Plan, schedule, and evaluate training programs
Evaluate instructors
Select and assign instructors
Supervise training program
Prepare, administer and score tests

Operate audio-visual aids

Research in Relation to the Radiologic Technologist

Analyze technical radiology research data
Assemble equipment for research
Design radiology research
Write reports or technical papers for publications
Compile experimental data for reports
Coordinate experimental program design with statistician and external and internal agencies
Design and develop experimental devices or equipment
Design forms for maintaining radiology research data
Use radioactive sources in research

Technical Writing

Write reports or technical papers for publications
Compile experimental data for reports
Design forms for maintaining radiology research data

APPENDIX B

AN ANALYSIS OF TWO TASKS FOR EMERGENCY MEDICAL TECHNICIAN

APPENDIX B

AN ANALYSIS OF TWO TASKS FOR EMERGENCY MEDICAL TECHNICIAN

The tasks presented in this appendix are representative of the Emergency Medical Technician (EMT) Task List developed by EPI, and have been analyzed as a means of extracting specific behavioral objectives from a task statement. In an effort to determine the skills and knowledge necessary to perform the stated task, each task is reduced to the individual elements which compose the total unit of work (task). From the element stage, the analysis progresses to the development of behavioral objectives, which describe the individual segments of skills and knowledge needed in the performance of the task. If this type of analysis is conducted on each of the task statements, the result would be a complete list of behavioral objectives for all tasks within the occupation.

In the development of the behavioral objectives for these two tasks, it became apparent that several of the objectives were common to both units of work. They include:

To be able to hyperextend neck (tilt head back) and/or displace mandible forward to open patient's airway.

To be able to observe for rise and fall of patient's chest and feel for exhalation of gas against cheek.

To be able to decide if time interval since last respiration makes patient potentially salvageable.

To be able to state the difference between biological and clinical death.

To be able to remove foreign bodies from patient's mouth and nose using crossed finger maneuver.

To be able to inflate patient's lungs at the rate of 12 - 15 times per minute in adults.

To be able to inflate patient's lungs at a higher rate in children, dependent upon age.

To be able to determine if pupils are dialated.

To be able to locate carotid pulse.

To be able to count carotid pulse.

To be able to determine if patient's condition requires external cardiac compression.

The objectives listed are common to both units of work and may be

combined during a training program to eliminate duplication within an individual's education.

Current curriculum usually includes the instruction of the necessary skills and knowledge to perform both of the listed tasks. However, there has been no careful examination of curriculum that relates to the commonality of behavioral objectives across tasks or procedures.

In a similar manner, some of the tasks within the Emergency Medical Technician Task List appear again in the Task Lists of the other eight professions being studied. The commonality across occupational areas is even more important to total curriculum development. Common elements and common tasks imply the need for a cross-occupational study that results in elimination of the duplication existing in closely related curriculum.

TASK ANALYSIS SHEET

Task Statement:

Function	Administer
Function Modifier	Alone and without the use of life-support equipment
Object	Cardiopulmonary Resuscitation (CPR)
Infinitive Phrase	
Function Limits	Examine patient to determine need for CPR, perform CPR, intermittently evaluate patient's condition and effectiveness of CPR, transfer of patient care responsibility to definitive care personnel.

Equipment & Work Aids: None

General Information:

How is task initiated?	Performer perception of patient condition
Who initiates task?	
Source of initiation? (Standard Operating Procedure, written or verbal instructions)	S.O.P.

TASK ANALYSIS SHEET (Cont'd.):

Elements:

(Preparation, Execution, Evaluation, and Termination)

1. Examine patient to determine need for CPR by hyperextending patient's neck and/or forward displacement of mandible to open airway.
2. Determine if patient is breathing at all.
3. Determine time interval since patient's last spontaneous respiration.
4. Make decision to begin pulmonary ventilation by intermittent positive pressure ventilation (IPPV).
5. Create airtight seal by placing mouth over patient's mouth and closing nostril openings.
6. Blow into patient's mouth using volume equal to patient's tidal volume.
7. Observe for rise and fall of patient's chest and exhalation of gas.
8. Examine patient's pupils for degree of dilation.
9. Palpate carotid artery for palpable pulse.
10. Make decision to start (or not to start) external cardiac compression.
11. Measure patient's sternum with hands to determine where to compress (center of lower half).
12. Maintain a rate of 60 - 80 compressions per minute in adults; 120 compressions per minute in children.
13. Depress the sternum one and one-half to two inches in adults.
14. Depress the sternum less than one and one-half inches in children, depending on size of child.
15. Relax pressure completely and briskly, without losing contact with sternum.

TASK ANALYSIS SHEET (Cont'd.):

Elements:

(Preparation, Execution, Evaluation, and Termination)

16. Interpose two respirations after fifteen compressions.

17. Evaluate effectiveness of compressions by examining patient; e.g., palpating the carotid artery, observing for constriction of previously dilated pupils, spontaneous respirations and improved skin color.

18. Make decision to continue CPR if patient has not improved.

19. Remove obstructions from mouth or nose with hands to open patient's airway.

20. Transfer patient to definitive medical care facility.

21. Transfer patient care responsibility to definitive medical care personnel.

TASK ANALYSIS SHEET (Cont'd.):

Conditions Effecting Performance of Task:

1. Perform task with patient on soft surface, e.g., patient's bed.
2. Perform task with patient on stretcher in a stable position.
3. Perform task with patient on stretcher while moving on a level surface.
4. Perform task with patient on stretcher while moving up or down steps.
5. Perform task with patient in a moving vehicle.

BEHAVIORAL OBJECTIVES

Administer cardiopulmonary resuscitation alone, and without the use of life-support equipment:

To be able to hyperextend neck and/or displace mandible forward to open airway.

To be able to observe for rise and fall of patient's chest and feel for exhalation of gas against cheek.

To be able to decide if time interval since last respiration makes patient potentially salvageable.

To be able to state the difference between biological and clinical death.

To be able to remove foreign bodies from patient's mouth and nose using crossed finger maneuver.

To be able to blow into patient's mouth using volume equal to patient's tidal volume.

To be able to remove mouth from patient's mouth to allow exhalation of gas from patient's lungs.

To be able to inflate patient's lungs at the rate of 12 to 15 times per minute in adults.

To be able to inflate patient's lungs at a higher rate in children, dependent upon age.

To be able to determine if pupils are dilated.

To be able to locate carotid pulse.

To be able to count carotid pulse.

To be able to determine if patient's condition requires external cardiac compression.

To be able to locate patient's sternum.

To be able to determine area of sternum to be depressed.

To be able to place the long axis of the heal of one hand in line with the sternum, with the other hand on top of the hand in contact with the sternum.

To be able to compress and release the sternum, without completely losing contact with the patient's chest.

BEHAVIORAL OBJECTIVES (Cont'd.):

To be able to compress the sternum with wrist and hand in a hyperextended position, (or other position preventing contact with the rib cage).

To be able to compress the sternum at the rate of 60 - 80 times per minute in adults.

To be able to inflate the lungs two times per fifteen compressions.

To be able to perform CPR without a greater than five second pause.

To be able to evaluate the effectiveness of CPR by examining patient: e.g., constriction of previously dilated pupils; improved skin color; spontaneous respirations; and spontaneous pulse.

To be able to modify an inadequate surface area to perform CPR.

To be able to perform CPR while moving patient on stretcher while on a flat surface.

To be able to perform CPR while moving patient on stretcher while on steps.

To be able to perform CPR while patient is in a moving vehicle.

TASK ANALYSIS SHEET

Task Statement:

Function	Operate
Function Modifier	
Object	Bag-valve mask ventilation device
Infinitive Phrase	To perform intermittent positive pressure ventilation (IPPV)
Function Limits	Examine patient to determine need for IPPV, ventilate with bag-valve mask, intermittently evaluate patient's condition and transfer patient care responsibility to definitive care personnel

Equipment & Work Aids: Bag valve mask ventilation device

General Information:

How is task initiated?	Performer perception of patient condition
Who initiates task?	Performer
Source of initiation? (Standard Operating Procedure, written or verbal instructions)	S.O.P.

TASK ANALYSIS SHEET (Cont'd.):

Elements:

(Preparation, Execution, Evaluation, and Termination)

1. Examine patient to determine need for IPPV by hyperextending patient's neck and/or forward displacement of the mandible.
2. Determine if patient is breathing at all.
3. Determine time interval since patient's last spontaneous respiration.
4. Make decision to start IPPV.
5. Assign co-worker to connect O_2 source to bag-mask ventilation device.
6. Select proper size mask for patient and connect to bag-valve mask device.
7. Create air-tight seal by placing mask over patient's mouth and nose.
8. Maintain head tilt and mask seal with the same hand.
9. Squeeze bag to propel air through valve and mask.
10. Relax hand and fingers to allow bag to expand.
11. Maintain a rate of 12 - 15 inflations per minute in adults; 20 - 30 per minute in infants.
12. Evaluate effectiveness of ventilation by examining patient; e.g., skin color and profusion, constriction of previously dilated pupils and spontaneous respiration.
13. Make the decision to continue ventilation, if condition is not improved.
14. Make decision to start (or not to start) cardiac compression.
15. Transport patient to definitive care facility.

TASK ANALYSIS SHEET (Cont'd.):

Elements:

(Preparation, Execution, Evaluation, and Termination)

16. Transfer responsibility for patient care to definitive medical facility personnel.

TASK ANALYSIS SHEET (Cont'd.):

Conditions Effecting Performance of Task:

1. Perform task with patient in position in which he is found; e.g., on floor in home, in automobile seat or pool side.
2. Perform task with patient on stretcher in a stable position.
3. Perform task with patient on stretcher while moving on a level surface.
4. Perform task with patient on stretcher while moving up or down steps.
5. Perform task with patient in a moving vehicle.

BEHAVIORAL OBJECTIVES

Operate bag-valve mask to ventilate patient:

To be able to assemble the parts of a bag-valve mask ventilation device.

To be able to demonstrate the working parts of a bag-valve mask ventilation device.

To be able to list in writing the advantages and disadvantages of using a bag-valve mask ventilation device.

To be able to hyperextend neck and/or displace mandible forward to open airway.

To be able to observe for rise and fall of patient's chest and feel for exhalation of gas against cheek.

To be able to examine patient's tidal volume and decide if IPPV is necessary.

To be able to decide if the time interval since the last respiration makes it possible to salvage patient without brain damage.

To be able to state the difference between biological and clinical death.

To be able to attach O_2 connecting tube to input fitting of bag-valve mask resuscitator.

To be able to select proper size mask for all patients.

To be able to create an airtight seal by placing mask over patient's mouth and nose.

To be able to hold mask on patient's face while maintaining head tilt with the same hand.

To be able to squeeze the bag with one hand so that pressure is applied to the bag for approximately 1.5 seconds every five seconds.

To be able to maintain a rate of 12 to 15 inflations per minute in adults.

To be able to determine the proper rate of inflation for children and infants, dependent upon their age.

To be able to recognize a distended stomach.

To be able to recognize airway obstructions.

BEHAVIORAL OBJECTIVES (Cont'd.):

To be able to determine if it is necessary to decrease stomach distension.

To be able to apply pressure on stomach with hand to decrease distension.

To be able to clear patient's airway by removing obstructions from mouth or nose by use of the cross finger maneuver.

To be able to evaluate effectiveness of ventilation by examining patient; e.g., skin color, pupil dilation, and spontaneous respiration.

To be able to make decision to continue ventilation if condition is not improved.

To be able to palpate carotid artery to determine if there is a pulse.

To be able to make decision to begin external cardiac massage, if needed.

To be able to switch operators and maintain rate of ventilation.

To be able to perform ventilations in a variety of positions; e.g., kneeling, from back seat of an automobile with patient in front seat.

To be able to continue ventilation while moving patient on stretcher.

To be able to continue ventilation while in a moving vehicle.

APPENDIX C

EPI ALLIED HEALTH PROFESSIONS PROJECT
COMPLETED SURVEY INSTRUMENTS RECEIVED FROM HEALTH CARE FACILITIES

EPI ALLIED HEALTH PROFESSIONS PROJECT

COMPLETED SURVEY INSTRUMENTS RECEIVED FROM HEALTH CARE FACILITIES

County	Nursing RN	Nursing LPN	Nursing NA	Ward Management	Radiology	Respiratory Care	Medical Labs	Medical Records	Food Service	Business Office	TOTAL
Allegheny											
Western Psych.	4		5		1			3	4	4	21
Children's	5	2	3		2	3	9		3	4	31
Montefiore	5	5	5	3	3	3	3	4	4	4	39
Magee-Womens	5	5	5	—	3	3	4	4	4	7	40
Total	19	12	18	3	9	9	16	11	15	19	131
Westmoreland											
Monsour	5	5	3	3	2	2	3	2	4	4	33
Jeannette	5	5	5	3	3	3	3	3	3	4	37
Westmoreland	5	5	5	3	3	3	3	3	3	4	37
H. C. Frick	5	5	5		3	2	3	3	3	4	33
Citizens General	4	5	5	3	3	3	3	3	3	4	36
Manor	4	4	4	—	—	1	—	1	3	2	19
Total	28	29	27	12	14	14	15	15	19	22	195
GRAND TOTAL	47	41	45	15	23	23	31	26	34	41	326

APPENDIX D

ORIGINAL TASK INVENTORY AND REVISED TASK INVENTORY

APPENDIX D
ORIGINAL TASK INVENTORY

RADIOLOGY SURVEY

EDUCATIONAL PROJECTS, INC.
ALLIED HEALTH PROFESSIONS PROJECT

This is part of a project to develop new courses of study and instructional materials for persons in the allied health professions. To find out what should be taught and how best to teach it, we must find out what tasks or functions really are performed by persons such as you who are working in the field.

We are asking the cooperation, therefore, of employees in a small, selected group of hospitals throughout the Commonwealth. You are one of these employees. YOUR ANSWERS ARE IMPORTANT!!

This is a confidential document for research purposes only. Your identification card will we kept separate from your answers to the questionnaire. Answers will be prepared for the data processing and the results will be reported by group only, not by individual.

Respondent I.D. Number

BACKGROUND INFORMATION SHEET

ID number_____

Please complete this information sheet and return it with the survey form. The answers to these questions are of importance as we try to evaluate responses from a large number of people across the Commonwealthwhere educational and licensure requirements for specific jobs may be very different.

THIS IS A CONFIDENTIAL DOCUMENT IDENTIFIED BY NUMBER ONLY.

THIS INFORMATION WILL BE USED FOR RESEARCH PURPOSES ONLY.

1. Your position title_____

2. Department_____

3. Your major area of responsibility_____

4. Years in present position_____

5. Years in occupation_____

6. Previous occupation_____

7. Years in previous occupation_____

8. Age_____

9. Sex (circle) M F

10. Highest school grade completed (circle one)

less than 8	8	9	10	11	12	more than 12

(Continued on next page)

11. Highest academic level completed (circle one)

11.1 Less than high school diploma

11.2 High school diploma or equivalent

11.3 Some college (no degree)

11.4 Associate degree

11.5 Bachelor's degree (major) _____

11.6 Master's degree (major) _____

11.7 Other (specify) _____

12. Technical or other training program(s) completed (circle)

	Months	Area or Subject
12.1 None		
12.2 On-job or apprenticeship	_____	_____
12.3 Military courses	_____	_____
12.4 Manufacturers' courses	_____	_____
12.5 Vocational school	_____	_____
12.6 Certificate or diploma program	_____	_____
12.7 Other courses	_____	_____
	_____	_____

13. Certificates, licenses or registrations held

(specify) _____

14. Are you employed full time in your present position? (circle) YES NO

15. Present yearly hospital salary (circle one)

14.1 less than $2000

14.2 $2000 - 3999

14.3 $4000 - 5999

14.4 $6000 - 7999

14.5 $8000 - 9999

14.6 $10000 - 11999

14.7 $12000 - 15000

14.8 more than $15000

SURVEY DIRECTIONS

Read each task statement in the list. If you perform the task in your job, place a check mark in the first column after the statement. If you supervise performance of the task by other persons, place a check mark in the second column.

For each task that you perform (and have checked in the first column), place an X mark in one of the squares of the Frequency column and in one of the squares of the Difficulty column to indicate your answers to the following questions:

A. Frequency: How often do you perform this task?

1. Several times a day
2. Once a day or several times a week
3. Once a week or several times a month
4. Once a month or less often

B. Difficulty: How difficult is this task?

1. Easy: You follow a standard procedure that does not require any decisions; you never have to consult a procedure manual or a supervisor.

2. Moderate: You have to select the most suitable procedures to fit different conditions or situations; you sometimes have to consult a procedure manual or a supervisor.

3. Difficult: You encounter problems that may require changes in procedures or the use of new procedures; you usually have to consult a procedure manual or a supervisor.

Step one: Read all tasks on this page, check those tasks which you perform or supervise.

Step two: For those tasks checked in step one, indicate with an "X" the frequency and difficulty of performance.

Blank spaces are for other tasks that you perform or supervise.

A. Radiology Tasks

	Check if you perform this task	Check if you supervise the performance of this task	FREQUENCY [X] How often do you perform this task? Several times a day	Once a day or several times a week	Once a week or several times a month	Once a month or less	DIFFICULTY [X] How difficult is this task? Easy	Moderate	Difficult
1. Review patient's clinical history.	☐	☐	1	2	3	4	1	2	3
2. Prepare trays for special examinations.	☐	☐	1	2	3	4	1	2	3
3. Load and unload film units.	☐	☐	1	2	3	4	1	2	3
4. Use polaroid units	☐	☐	1	2	3	4	1	2	3
5. Position patients for treatment.	☐	☐	1	2	3	4	1	2	3
6. Prepare written radiology therapy instructions for patients.	☐	☐	1	2	3	4	1	2	3
7. Store radioactive materials.	☐	☐	1	2	3	4	1	2	3
8. Wash and sterilize treatment facilities.	☐	☐	1	2	3	4	1	2	3
9. Assist in treatment planning.	☐	☐	1	2	3	4	1	2	3
10. Number cassettes or screens for identification.	☐	☐	1	2	3	4	1	2	3
11. Select immobilization devices.	☐	☐	1	2	3	4	1	2	3
12. Place patient in radiographic position.	☐	☐	1	2	3	4	1	2	3
13. Clean radiographic equipment.	☐	☐	1	2	3	4	1	2	3
14. Affix lead shield to cassette for identification.	☐	☐	1	2	3	4	1	2	3
15. Prepare contrast media such as barium sulphate.	☐	☐	1	2	3	4	1	2	3

TA

07.05 00 00 00

APPENDIX D

REVISED TASK INVENTORY

(TASK STATEMENTS WILL BE LISTED IN THIS SPACE.)

	FREQUENCY (7)	SUPERVISION (7) (3)	DIFFICULTY (3)	TRAINING (5)
	How often do you perform this task?	Is another individual usually involved?	How much supervision received?	How difficult is this task?	How were skills and knowledge received?
	Several Times a Day 104	You Assist	Close Supervision	Easy	General Education
(8)	Once a Day or Several Times a Week 4-29	You are Assisted	General Direction	Moderate	On-Job Training
	Once a Week or Several Times a Month	Equal Involvement	No Supervision	Difficult	Occupational Training
	Once a Month or Less				Experience
	Never				

APPENDIX E

BACKGROUND DATA SURVEY

APPENDIX E

BACKGROUND DATA SURVEY

1. AGE _____

2. SEX M F

3. YEARS IN EMS _____

4. POSITION HELD
   - Managerial ___
   - Shift Supervisor ___
   - Driver/Crew Chief ___
   - Attendant ___
   - Dispatcher ___
   - Clerical ___

5. YEARS IN THIS POSITION _____

6. IS THIS POSITION
   - Full Time ___
   - Part Time ___
   - Voluntary ___

7. IF FULL TIME, IN WHAT AREA WERE YOU PREVIOUSLY EMPLOYED?
   - Health Services ___
   - Military ___
   - Other ___
   - None ___

8. IF PART TIME OR VOLUNTARY, IN WHAT AREA ARE YOU PRESENTLY EMPLOYED?
   - Health Services ___
   - Production Industry ___
   - Service Industry ___
   - Education ___
   - Military ___
   - Student ___
   - Other ___
   - None ___

9. IF PAID, ON WHAT BASIS?

   Hourly ___ Salary ___ Per Call ___ Other ___

BACKGROUND DATA SURVEY (cont)

10. REGISTRIES HELD.

EMT ___ RN ___ LPN ___ CIIT ___ ARIT ___ OTHER ___

11 HIGHEST ACADEMIC LEVEL ACHIEVED.

Less than 8	___	High School Diploma (Equiv)	___
9	___	Associate Degree	___
10	___	Bachelor Degree	___
11	___	Masters Degree	___
12	___	Phd.	___

12. TRAINING RECEIVED.

___ None

___ Standard Red Cross

___ Advanced Red Cross

___ Instructor Red Cross

___ CPR (AHA Instruction)

___ Extrication Training

___ Pa. Dept. of Health Emergency Ambulance Attendant Course

___ 80 hour Dept. of Transportation (U.S.) course

___ Electrocardiography course

___ Infusion of I.V. fluids training

___ Infusion of drugs training

___ Advanced Medical Technician; 480 hrs.

___ Other Specify: _____

_____

_____

13. If you are not a registered EMT, will you be taking the EMT Registry Examination within the next year.

____ Yes
____ No

14. If you were offered the following courses, in which would you enroll? How many are available in your area?

Would Enroll		Are Available
____	Standard Red Cross	____
____	Advanced Red Cross	____
____	Instructor Red Cross	____
____	CPR Training by a Certified American Heart Association Instructor	____
____	Pennsylvania Department of Health Emergency Ambulance Attendant Course	____
____	Extrication Training	____
____	80 Hour U.S. Department of Transportation Training Program	____
____	Electrocardiography Training	____
____	Infusion of I.V. Fluids Training	____
____	Infusion of Drugs Training	____
____	Advanced Medical Technician; 480 Hours	____

15. There has been legislation proposed within Pennsylvania, that will require certain standards of equipment and training for ambulance services. How would you vote on that legislation?

____ For the legislation
____ Against the legislation

APPENDIX F

ADVISORY COMMITTEE

EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE PROJECT

APPENDIX F

ADVISORY COMMITTEE

EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE PROJECT

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APPENDIX G

DRAFT DOCUMENT

EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE PROJECT

EMERGENCY MEDICAL SERVICES: PRE-HOSPITAL CARE

INTRODUCTION

Educational Projects, Incorporated (EPI) is a non-profit corporation established in Pennsylvania in 1965 in order to provide educational consultant services, both nationally and internationally. Since inception, the programmatic involvements of the corporation have had the backing of a consortium of eleven leading American universities which have provided both expertise and counsel in the implementation of the various EPI educational projects which have ranged from pre-school through the post-doctoral level, and funded by federal, state, and private foundation grants or contracts.

Late in 1967, the corporation became concerned with the need for developing a viable system for the education and training of technicians. As a result of this concern, a series of conferences supported by a modest grant from The Sarah Mellon Scaife Foundation were held with representatives from industry, state and local governments, labor, secondary and vocational school systems, junior and community colleges, private technical institutes, and four-year degree granting institutions within the Commonwealth of Pennsylvania. The purpose of these meetings was to verify that EPI's concern was justified and to devise a plan of action which, if implemented, would provide the mechanics and guidelines for satisfying the requirements for skilled technicians in the Commonwealth. The results of these meetings focused on the need for a well-conceived and comprehensive program based upon an analysis of industries on a state-wide basis, with emphasis being placed on the specific tasks requisite for performance in specific functional areas of any given industry. Further, the consensus of these conferences emphasized the need for:

1. Institutions responsible for education and training of technicians to consider the skills requisite for technicians to provide quality services in industry, business, and government in their community, and equally important the needs of the people in the community.

2. A segment of the educational system to assume the major portion of the overall responsibility for such technical training and the assurance that it would be relevant to the

needs of the region.

3. A coordinated program between the secondary schools, technical institutes, junior and community colleges, and baccalaureate institutions needed to be developed for the education of technicians.

4. The baccalaureate institutions to devise programs for preparation of potential faculty members in cooperation with the institutions responsible for the education of technicians.

The task analysis approach as proposed by EPI was endorsed as an avenue which will lead to a definitive method by which the needs of the various employers can be translated into curricula and specific courses of study. In the task analysis methodology employed by EPI, each occupation will be examined to determine the specific tasks which are performed and which personnel are performing those tasks. Once this data is compiled, it will be possible to relate the performance of tasks to specific training required of individuals entering that occupation. Through analysis of the tasks themselves, the skills and knowledge needed will be determined.

Because of EPI's non-vested position in the resolution of the problems articulated at these conferences, the representatives urged EPI to solicit funding from the private sector and the Commonwealth to commence task analysis. EPI secured a commitment of funds over a three-year period commencing in October 1970 from both The Sarah Mellon Scaife Foundation and the Bureau of Vocational, Technical and Continuing Education, Department of Public Instruction, of the Commonwealth of Pennsylvania.

THE ALLIED HEALTH PROFESSIONS PROJECT:

In a mutual agreement between the funding sources and EPI, it was decided that the effort for the three-year period should be directed toward the allied health professions. It was also agreed that the results of the task analysis should have emphasis in application to curriculum in the secondary and community college systems. The occupational areas chosen to be included in this project were:

(a) Nursing;
(b) Radiology;
(c) Inhalation Therapy;
(d) Medical Laboratories;
(e) Ward Management;
(f) Medical Records;
(g) Business Office;
(h) Food Service;

A pilot survey of those eight areas was conducted and the results of that investigation were published by EPI in the Interim Report of the Allied Health Professions Project (April 1972). In addition to these, it was also decided that an emerging occupation would be included. The area chosen to be included was the field of emergency medical ambulance services. In summary, the project as funded involves the survey of a sample of individuals performing these occupations in the Commonwealth to determine:

(a) the performance of the given tasks by occupational level within a profession e.g., tasks performed by all levels of nursing, N.A., L.P.N. and R.N.

(b) the frequency of performance of the tasks as estimated by the performer.

(c) the difficulty of the task assessed by the performer.

The results of the survey are then analyzed to determine the necessary training required at various levels within the occupation. This analysis will include a Factor Analysis to relate skills and knowledge across occupational areas. In post-hoc blocking, individual respondents will be grouped according to their responses on the background survey form and their task inventory responses will be compared on that basis. From the analysis, curriculum and courses of study can be developed for training at the appropriate point in the trainees' development.

The commitment of the Allied Health Professions Project, which requires the examination of an emerging profession, has led EPI to initial investigation of the field of Emergency Medical Services. There are many needs which have emerged during the research of the the entire field, but the pre-hospital care and transportation area has manifiestd the greatest concern. It is as a result of this concern that EPI has originated this document; the purpose of which is to state the direction and expected results of the current project as well as providing possible objectives for the future.

Current Project Outputs in EMS

The current Allied Health Professions Project will result in certain outputs in the area of emergency medical services: pre-hospital care. These will be applicable only to the random sample of emergency medical ambulance services within the Commonwealth of Pennsylvania. Among the specific outputs of this

project are:

1. A list of tasks for personnel providing emergency medical ambulance service;

2. A survey to determine the frequency of performance and amount of delegation of tasks;

3. An analysis of the task data to determine relevance of current and proposed curriculum;

4. An analysis of the relationship of these tasks to those of the other allied health professions being studied.

Under LPI's current contract with the Pennsylvania Department of Education, task analysis will be employed to achieve the previously mentioned outputs. In the initial investigation of the field of Emergency Medical Services, several needs were discovered which we felt were not being met and were closely related to the objectives of our project. After consulting with several experts working in this area, it was determined that they concurred with our opinion; that there appeared to be a need for a better system of compiling and storing information about the entire health system, from which planning and allocation of resource decisions may be made. This need seemed to be especially evident in the field of Emergency Medical Services. The above mentioned information system would need to include:

1. Personal information about all individuals performing services;

2. Information about all the tasks performed in rendering the service;

3. A directory of all providers of emergency medical services;

4. Specific information about patients using the service;

5. Financial information concerning the operation of all services.

The first two areas mentioned will be included in the current contract, while our present funding level is not sufficient to fulfill the other needs. The following pages describe possible future steps in the development of an ongoing information system.

Background

Currently, the Commonwealth of Pennsylvania has more than 1,000 individual ambulance services, of which approximately two-thirds are volunteer groups. There are approximately 20,000 ambulance attendants servicing these 1,000 organizations. Of these, 16,000 have only the basic training experience which meet the most minimal of standards. (Directory of Ambulance Services In Pennsylvania, Pa. Dept. of Health, Nov. 1970). Efforts are underway in the Commonwealth, as in other states and at the national level, to improve existing services. This includes efforts to develop emergency care systems; i.e., integrating communications, transportation, and medical care services into a more rational system than currently exists. This requires upgrading of hardware and software; establishment of links between the various organizations concerned with providing emergency health care services; and, most importantly, evaluation and upgrading of the personal skills of those individuals currently involved in providing emergency care services, as well as those entering the system in the future.

It is with this last element in mind, that the following is outlined, and stated in the simplest format, the project goal is:

> "to develop an information system that can provide for optimal allocation of resources of emergency medical ambulance services on an individual service level as well as an area wide basis."

To reach this goal, a series of variables must be examined, many of which will require data collection and analysis efforts. Sampling units are obviously needed for the more than 1,000 ambulance services which currently provide emergency care services in the Commonwealth, as is a replicatable system of data collection and analysis that is apropos to efficiently meet the objective stated above.

Overview of the Project:

To meet the project goal, several types of data must be collected. While some are from secondary sources, such as current literature and past surveys, and will provide the information to develop the sampling units, much of the needed data will have to be collected through the use of five questionaires, i.e.:

1. Survey of Ambulance Services (Appendix A);

2. Patient Contact Report (Appendix B);

3. Financial Data Sheet (Appendix C);

4. Task Survey Background Instrument (Appendix D);

5. Task List Survey Instrument (Appendix E).

The data gathered will provide a base upon which an information systems can be formed. The data will be entered to a computer system and will be retrievable in various formats in order to provide information to those involved in both the planning and the delivery of emergency ambulance services.

The specific project objectives include:

(1) the development, pre-testing for reliability and utilization of data collecting questionnaires.

(2) develop an information system with the specific objectives:

(a) to provide information for training and educational capabilities in order that these efforts might be optimized in terms of needs;

(b) to feed back to individual ambulance services pertinent and useful data so they might provide better services to their constituency;

(c) to feed back to those individuals participating, the data which relates their performance to similar categories of individuals or similar training and training backgrounds;

(d) to provide the background data to measure the impact of pending Commonwealth and national proposals to upgrade services. This will provide a continuing monitoring capability to help measure the impact of proposed changes.

Procedure:

Gather General Information of Field to be Surveyed:

General demographic data, descriptive in nature, regarding ambulance services must be gathered from experts in the field and a survey of ambulance services. Some examples of the kinds of data which might be gathered are:

(a) name of ambulance service location;

(b) sponsoring agency;

(c) size of organization;

(1) number of vehicles;

(2) number of personnel and categories of personnel;

(3) number of personnel and categories of and/or year;

(4) communications system;

(d) physical plant location (hospital, firehall, independent, etc.);

(e) type of training programs sponsored by organization (Red Cross, CPR etc.);

(f) type of training programs available to organization (Red Cross, CPR etc.);

(g) geographical area served.

An exhaustive list of the data to be gathered is found in Appendix A.

Selection of Sample:

From the general demographic data gathered, a random sample of units or services will be chosen for on-site visitations and validation of task lists. Upon selection of the sites, contact will be made with the respective ambulance service administrators to obtain approval for their participation in the study. If services refuse to participate, that refusal will be documented. At this point, it will be necessary to indicate the reason for the study and the reasons why the particular site was chosen.

Development of Initial Inventory:

Through a literature search and discussion with various experts in the Emergency Medical Services field, an initial inventory of tasks has been developed. During this initial phase, the tasks will be grouped according to worker activity type; e.g., clerical, administrative, patient care, emergency treatment, extrication and maintenance.

After the initial preparation of the task list, on-site visitations to a portion of the sample sites will take place. The on-site visitation will entail an analyst observing the operation of the particular activity type in question. In order that this analysis might be carried out in the most expedient manner, it will be desirable that the analyst observe the worker within only one specific category at a time; i.e., the analyst will visit the site so as to observe those tasks which are involved in the function of performing administrative service. During observation, the analyst will complete the task analysis sheet illustrated in Appendix F. So as to be sure that the tasks and their purposes are understood, it may be necessary for the analyst to interview either the person administratively responsible for the worker performing the function or, if much discretion is given to the worker, the worker himself. The results of this analysis will provide one task analysis sheet for each task performed by the worker within the particular function being observed.

Upon completion of the inventory of tasks, a questionnaire will be designed and be used to determine the performance frequency and amount of responsibility delegated to respondants. An example of such an instrument illustrating the categories involved for validation is given in Appendix E. The instrument will be prepared in a computer processable form in order that the data gathered can be entered to the computer without the need for coding and/or keypunch data preparation, by using optical scanning. In addition, a background survey sheet will be prepared which delineates the individual respondent's particular data, relating to training in EMS, formal education, age etc.. From this data, comparisons and Factor Analysis using post-hoc blocking on various characteristics can be made. An example of this background sheet is given in Appendix D. Again, wherever possible, the data will be gathered in such a way as to be easily processable with no coding intervention on the part of the analyst after the data has been gathered.

The reliability of the subjects' responses to the Task Inventory must be examined to assure accurate data. In order to test reliability of response, a small number of units will be event sampled to observe tasks being performed. Upon completion of the observation, during which the analyst records tasks performed, the performer will be asked to respond to the Task Inventory. By comparing observed tasks to subjects responses, we will obtain an estimate of the reliability of responses obtained using the inventory technique.

The Data Gathering:

The survey sites chosen randomly from the population of providers of ambulance service, will be sampled. Included as a part of the sample will be those sites which were originally used for on-site

validation of the task inventory.

The period of the survey will be one month. During this time, the sample sites will be requested to complete the Patient Contact Record (Appendix B) and to collect and report the financial data necessary for the completion of the Financial Data Sheet (Appendix C).

At the end of the sample period, the Task Survey Background Instrument and the Task List Survey Instrument (Appendices D and E) will be completed by all individuals providing services at the survey site. These instruments, along with the Service Contact Records and the Financial Data Sheet, will be returned to EPI.

The Data Analysis:

Various kinds of information can be obtained from the data which is gathered from the survey sites. As examples of the kind of information obtainable, the following is given:

Information related to total population in Emergency Ambulance Service includes:

(a) a summary of ambulance services available in the Commonwealth;

(b) a breakdown of the numbers of various types of services, by sponsor and by location;

(c) total persons employed in ambulance services;

(d) amount and type of specialized equipment available;

(e) number of personnel having training, by type and amount of training received;

(f) number of services available in each area of the Commonwealth.

Information related to the specific survey sites in terms of the tasks performed includes:

(a) tasks performed and equipment used;

(b) the relationship of task performance to:

(1) training received;

(2) years of experience;

(3) type of sponsoring agency;

(4) employment status: full-time, part-time, paid, or volunteer;

(5) job position: attendant, driver, crew chief, or manager.

Information related to the specific survey sites in terms of the patient contact data includes:

(a) proportion of types of service by:

(1) nature of call;

(2) nature of treatment;

(3) disposition of patient;

(b) distribution of service area covered;

(c) total usage of equipment in terms of:

(1) mileage covered;

(2) time required for service;

(d) distribution of hospitals served by the ambulance service.

Information related to the specific survey sites in terms of the financial data gathered includes:

(a) relationship of costs incurred to the specific monthly services rendered such as:

(1) cost revenue/mile;

(2) cost revenue/trip;

(3) cost revenue/type trip;

(b) relationship between expenses incurred and charges billed to patient.

Benefits of an Information System:

Certain benefits can be attained from the installation of such an ongoing information system for individual ambulance services for a period of time. Some of the benefits attained for individual ambulance services:

(a) a monitoring of task performance and the effect of additional training on this task performance;

(b) a monitoring of the type services offered and the radius of coverage;

(c) a beginning step to a cost-related billing system;

(d) the initial data necessary for installation of a cost control system;

(e) the trip time data necessary for optimal staffing and scheduling.

With the addition of other data such as a more complete financial summary and times attached to tasks, the individual ambulance services can begin to:

(a) take decisive steps in cost control;

(b) relate the type of call to the specific tasks required and thus the most effective staffing;

(c) develop a maintenance system related to usage of equipment;

(d) analyze the customer billing structure.

In terms of the area wide and national coordination of the individual ambulance services, some of the benefits gained from installation of the initial information system would be:

(a) the relationship between the kind of training received and tasks performed;

(b) the relationship of training in general and the apparent delegation of tasks to ambulance personnel;

(c) the effect of additional training and/or equipment on the mortality rate of patients transported;

(d) much of the necessary data for an areawide cost effectiveness evaluation;

(e) the data necessary to develop an areawide optimum location, staffing, equipping, and training allocation to individual services.

APPENDIX A

SURVEY OF AMBULANCE SERVICES

Information About This Survey

This survey is being conducted by Educational Projects Incorporated (EPI), a non-profit corporation with is currently involved in research of several different occupations within the health field. We are attempting to gather some basic information on all of the organizations providing ambulance service within the state of Pennsylvania in an effort to show the degree of progress within this area of medical care.

There will be absolutely no attempt to use this information to evaluate or compare the quality of services provided by any ambulance service. Our purpose is not to downgrade or embarass any one group. The efforts of our project are to better understand what kind of tasks are being performed by your group, so that those involved in directing training programs may determine the demand for individuals with various levels of training.

Instructions

We feel that most of the questions should be easy for you to answer. However, if the information asked for is not known by you, then answer by checking "unknown". If any of the answers require a combination of the choices listed, answer in the "other, please specify" response.

If any questions appear to be inappropriate to you or your organization, they do not need to be answered and if additional comments are necessary, feel free to make them in available space.

Definitions

Radius - the distance from the base of operation or location of dispatcher to the farthest location serviced.

Emergency medical services - patient care involving traditional first aid measures which do not violate body integrity e.g., splinting fractures, dressing wounds.

Definitive medical care - patient care involving measures which often penetrate body integrity e.g., administering drugs, administering intravenous fluids and defibrillating.

Definitions (Con't)

Direct telephone line- a telephone line which is independent of the general telephone system e.g., "Red Phone" or "Hot Line".

Completed ambulance call - the time when the ambulance is ready to respond to another call.

ORGANIZATION

1. Is your ambulance unit

____ Profit
____ Non-profit

2. What type of organization supports your ambulance unit?

____ Police Department
____ Fire Department
____ Funeral Home
____ Hospital
____ Other municipal service, please specify _____
____ Independent, please specify _____
____ Other, please specify _____
____ Unknown

3. From which source or sources does your ambulance unit receive operating funds?

Check all applicable.

____ Local tax support
____ Private grants
____ Donations and fund raising
____ Fee for services rendered
____ Federal or state funds
____ Subscriptions or membership fees
____ Other source, please specify _____

4. What is your usual base charge for service?

____ No charge
____ Less than $5
____ $6 to $10
____ $11 to $20
____ $21 to $30
____ $31 to $50
____ $51 or more
____ Unknown

5. Are all of your ambulances located in the same place?

____ Yes
____ No, if not, how many are at each location? _____

_____

_____

6. Are your ambulance attandants

____ Volunteer
____ Paid
____ Paid and Volunteer
____ Unknown

7. Is the manager or director of the ambulance unit

____ Volunteer
____ Paid
____ No manager appointed
____ Unknown

8. What is the approximate population served by your ambulance unit?

____ Under 5,000
____ 5,000 to 9,999
____ 10,000 to 24,999
____ 25,000 to 49,999
____ 50,000 to 99,999
____ 100,000 to 149,999
____ 150,000 to 249,999
____ 250,000 or more
____ Unknown

9. What is the radius from the base of operation to which you provide primary emergency response?

____ 2 miles or less
____ 3 miles to 4 miles
____ 5 miles to 8 miles
____ 9 miles to 15 miles
____ 16 miles to 25 miles
____ 26 miles to 50 miles
____ 51 miles to 100 miles
____ 101 miles or more
____ Unknown

10. What is the radius to which you provide inter-hospital transfer of critically ill or injured patients?

If inter-hospital transfer is not provided, do not answer.

____ 2 miles or less
____ 3 miles to 4 miles
____ 5 miles to 8 miles
____ 9 miles to 15 miles
____ 16 miles to 25 miles
____ 26 miles to 50 miles
____ 51 miles to 100 miles
____ 101 miles or more
____ Unknown

11. What services are provided by your ambulance unit?

Check all appropriate.

____ Emergency medical care
____ Definitive medical care, including defibrilation, IV and/or drugs rendered under medical supervision via two-way radio
____ Emergency transportation from site to medical facility
____ Emergency transportation of critically ill and injured between medical facilities
____ Non-emergency transportation of convalescent patients
____ Light rescue operations, using hand tools including such items as power saws, hydraulic jacks, bolt cutters pry bars, etc.
____ Extrication e.g., from automobiles

12. What is the total numger of ambulance calls made by your organization in 1971?

_____ (list number)
____ Unknown

13. Which of the following are included in your record keeping system?

____ Date of call
____ Place of patient pick-up
____ Disposition of patient
____ Type of call
____ Care given to patient
____ Name of patient

14. Do you provide ambulance service 24 hours per day, 7 days per week?

____ Yes, we provide service to all calls received if we have equipment available to respond.
____ No, we refuse certain emergency calls that we do not wish to take.
____ No, we refer certain calls to other units.
____ Unknown

15. Do at least two people go on each emergency call and remain with the vehicle until the call is completed?

____ Yes, always
____ No
____ Unknown

COMMUNICATIONS

16. Is there an emergency operations center or central dispatcher for this area?

____ Yes
____ No
____ Unknown

17. What is your most frequently used method of advising the hospital of a pending arrival of a critically ill or injured patient?

____ No information is provided
____ Closed telephone line
____ General telephone line
____ Two-way radio system
____ Other, please specify _____
____ Unknown

18. What is your most frequently used method of advising hospital personnel of emergency care provided at the scene and in transport?

____ No information provided
____ Closed telephone line
____ General telephone line
____ Advanced radio communication
____ Verbal communication to person receiving patient at the hospital
____ Medical tag or record accompanying the patient
____ Unknown

TRAINING

19. How many patient care attendants are there in the ambulance unit?

_____ (list number)

20. How many patient care attendants are registered with the national registry for Emergency Medical Technicians-Ambulance Division?

_____ (list number)

21. What are the minimal training standards in your ambulance unit and which training programs do you sponsor?

Check all applicable.

Minimal Training	Sponsored by Unit
____ No training	____
____ Standard Red Cross	____
____ Advanced Red Cross	____
____ Instructor Red Cross	____
____ CPR Training by certified instructor of the American Heart Association	____
____ Extrication Training	____
____ Pennsylvania Department of Health Emergency Ambulance Attendant Course	____
____ 80 Hour U.S. Department of Transportation Training Program	____
____ Definitive Care Training	____
____ Advanced Medical Technician, 480 Hours	____
____ Other course(s), Please describe	____
____ _____	____
____ _____	____
____ _____	____
____ _____	____
____ _____	____
____ _____	____

EQUIPMENT

22. How many ambulances does your unit operate?

Indicate number of each type listed.

____ Straight limosine
____ Raised roof limosine (high boy)
____ Van
____ Station Wagon
____ Truck mounted module
____ Travel-all type
____ Hearse conversion or "combination"
____ Amphibious vehicle
____ Watercraft
____ Helicopter
____ Airplane
____ Other, Please specify _____
____ _____

The source of the questions asked on this questionnaire is the "Survey of Ambulance Companies", jointly sponsored by the Western Pennsylvania Regional Medical Program and the Comprehensive Health Planning Council of Northwestern Pennsylvania, Inc.. This survey was more comprehensive in scope and depended upon an interview being conducted with the respondents.

APPENDIX B

PATIENT CONTACT REPORT

The Patient Contact Report will be designed to gather pertinent data concerning each ambulance trip. The form presented as Appendix B is derived from the New York State Dept of Health Ambulance Report form. This form is presented as an illustration of the type of information which will be gathered in the proposed information system. The actual form to be used has not yet been designed.

APPENDIX B
PATIENT CONTACT RECORD

Date ___/___/___ Date of Incident ___/___/___ Time Form Completed _____ Vehicle Number ___/___/___

Mileage

To location _____
From location
to destination _____

Patient Destination

1. Hospital _____
Name & City
2. Emergency Room ___
3. Hospital Bed ___
4. Out-Patient ___
5. Nursing Home ___
6. Home ___
7. Other ___
Explain _____

Time

Incident Occured _____
Call Received _____
Ambulance En Route _____
Arrived Location _____
Arrived Destination _____
Ready for Service _____

Nature of Call

Emergency ___
Urgent Transfer ___
Routine Transfer ___
Standby ___
Dry-Run ___
Other ___
Explain _____

Patient Status

Conscious ___
Semiconscious ___
Unconscious ___
Convulsing ___
Hemorrhaging ___
Vomiting ___

Patient Illness

Coronary ___ C.V.A. (Stroke) ___
Fracture ___ Obstetrical ___
Shock ___ Bleeding ___
Burns ___ Poisoning ___

Case Severity

Minor ___
Moderate ___
Severe ___
Critical ___
Apparent Death Before Ambulance Arrived ___
Apparent Death After Ambulance Arrived ___
Apparent Death En Route to Destination ___

Aid Given to Patient

Suctioned Airway ___
Airway Tube ___
Artificial Resp. ___
Oxygen ___
Defibrilator ___
Monitor (Cardiac) ___
Cardiac Compression ___
Medication (Drugs) ___
I.V. Fluids ___
Control Bleeding ___
Spinal Immobilization ___
Limb Splints ___
Traction Applied ___
Patient Restraints ___
Obstetrical Delivery ___
Transportation Only ___
Endotracheal Tube ___

Location of Call

Highway or Street ___
Work Site ___
Public Facility ___
Recreation Area ___
Home ___
Hospital ___
Nursing Home ___
Other ___
Explain _____

Crew

_____

_____

APPENDIX C

FINANCIAL REPORT

FROM __/__/__

TO __/__/__

DIRECT COSTS (related to specific trips)

Salaries _____

Fringe _____

Medical Supplies _____

Vehicular _____

TOTAL _____

INDIRECT COSTS (related to costs/month of operation)

Office and Clerical Salaries _____

Fringe _____

Supplies _____

Utilities _____

Vehicular _____

Space _____

TOTAL _____

ALLOCATABLE COSTS (related to investments consumed in a period greater than 1 month)

Vehicle _____

Vehicle Equipment _____

Other Equipment _____

Expenses _____

TOTAL _____

FINANCIAL REPORT (cont)

INCOME

Total Dollars Billed _____

Total Subscriptions _____

Total Local Funds _____

Total State Funds _____

Total Federal Funds _____

Total Private Funds _____

TOTAL _____

APPENDIX D

BACKGROUND DATA SURVEY

1. AGE _____

2. SEX M F

3. YEARS IN EMS _____

4. POSITION HELD
   - Managerial ____
   - Shift Supervisor ____
   - Driver/Crew Chief ____
   - Attendant ____
   - Dispatcher ____
   - Clerical ____

5. YEARS IN THIS POSITION _____

6. IS THIS POSITION
   - Full Time ____
   - Part Time ____
   - Voluntary ____

7. IF FULL TIME, IN WHAT AREA WERE YOU PREVIOUSLY EMPLOYED?
   - Health Services ____
   - Military ____
   - Other ____
   - None ____

8. IF PART TIME OR VOLUNTARY, IN WHAT AREA ARE YOU PRESENTLY EMPLOYED?
   - Health Services ____
   - Production Industry ____
   - Service Industry ____
   - Education ____
   - Military ____
   - Student ____
   - Other ____
   - None ____

9. IF PAID, ON WHAT BASIS?

   Hourly ____ Salary ____ Per Call ____ Other ____

BACKGROUND DATA SURVEY (cont)

10. REGISTRIES HELD.

EMT ___ RN ___ LPN ___ CIIT ___ ARIT ___ OTHER ___

11 HIGHEST ACADEMIC LEVEL ACHIEVED.

Less than 8	___	High School Diploma (Equiv)	___
9	___	Associate Degree	___
10	___	Bachelor Degree	___
11	___	Masters Degree	___
12	___	Phd.	___

12. TRAINING RECEIVED.

___ None

___ Standard Red Cross

___ Advanced Red Cross

___ Instructor Red Cross

___ CPR (AHA Instruction)

___ Extrication Training

___ Pa. Dept. of Health Emergency Ambulance Attendant Course

___ 80 hour Dept. of Transportation (U.S.) course

___ Electrocardiography course

___ Infusion of I.V. fluids training

___ Infusion of drugs training

___ Advanced Medical Technician; 480 hrs.

___ Other Specify: _____

_____

_____

13. If you are not a registered EMT, will you be taking the EMT Registry Examination within the next year.

____ Yes
____ No

14. If you were offered the following courses, in which would you enroll? How many are available in your area?

Would Enroll		Are Available
____	Standard Red Cross	____
____	Advanced Red Cross	____
____	Instructor Red Cross	____
____	CPR Training by a Certified American Heart Association Instructor	____
____	Pennsylvania Department of Health Emergency Ambulance Attendant Course	____
____	Extrication Training	____
____	80 Hour U.S. Department of Transportation Training Program	____
____	Electrocardiography Training	____
____	Infusion of I.V. Fluids Training	____
____	Infusion of Drugs Training	____
____	Advanced Medical Technician; 480 Hours	____

15. There has been legislation proposed within Pennsylvania, that will require certain standards of equipment and training for ambulance services. How would you vote on that legislation?

____ For the legislation
____ Against the legislation

APPENDIX E

(TASK STATEMENTS WILL BE LISTED IN THIS SPACE.)

	FREQUENCY							SUPERVISION			DIFFICULTY		TRAINING				
	How often do you perform this task?							Is another individual usually involved?			How much supervision do you receive?		How difficult is this task?		How were skills and knowledge received?		
	Several Times a Day	Once a Day or Several Times a Week	Once a Week or Several Times a Month	Once a Month or Less	Never	You Assist	You are Assisted	Equal Involvement	Close Supervision	General Direction	No Supervision	Easy	Moderate	Difficult	General Education	On-Job Training	Occupational Training	Experience

APPENDIX F

TASK ANALYSIS SHEET

Task Statement:

Function _____

Function Modifier _____

_____

Object _____

Infinitive Phrase _____

_____

Function Limits _____

_____

_____

_____

Equipment & Work Aids: _____

_____

_____

_____

General Information:

How is task initiated? _____

_____

Who initiates task? _____

_____

Source of initiation? _____

(Standard Operating Procedure, written or verbal instructions) _____

_____

_____

TASK ANALYSIS SHEET (Cont'd.):

Elements:

(Preparation, Execution, Evaluation, and Termination)

TASK ANALYSIS SHEET (Cont'd.):

Conditions Effecting Performance of Task: